

REMARKS

This is a full and timely response to the final Office Action dated November 7, 2002 (Paper No. 06) and to the Advisory Action dated February 21, 2003 (Paper No. 09). In compliance with 37 CFR § 1.116, the present amendment places previously rejected claim 1 in better form for allowance, is supported by arguments for patentability as presented below, and merely places features from claim 7 previously considered by the Examiner into claim 1. No new matter has been added. Reexamination and reconsideration in light of the present amendment are respectfully requested.

Amendment to Claim 1:

Claim 1 is amended herewith to further recite that the object beam optical system is for condensing the superposed image in the parallax direction. Support for this limitation may be found at least on page 8, section 0037; and page 11, section 0047 of the specification and in claim 7 as filed. As described below in greater detail, it is believed the foregoing amendment places claim 1 in allowable form, and withdrawal of the rejection of claim 1 is respectfully requested.

Claim Rejections- 35 U.S.C. § 103:

In the Action, the Examiner maintains his initial rejections of claims 1-4, 7-10 and 12 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,786,133 ("Chen") in view of U.S. Pat. No. 5,473,447 ("Molteni") or U.S. Pat. No. 4,834,476 ("Benton"). Specifically, the Examiner contends that Chen teaches of a cylindrical lens system 122 and a cylindrical lens 124 used as a beam-condensing projection optical system for condensing the superposed image to project the plurality of images onto the hologram recording medium. These rejections are respectfully traversed in light of the present amendment.

In the present invention, as is described on page 8, section 0037 of the specification, "the beam-condensing projection optical system 41 condenses a beam in the parallax direction and forms an image in the non-parallax direction on the surface of

the hologram recording medium 42.” This beam-condensing optical system condenses the object light in such a way that the 5 images displayed in the LCD spatial modulator 38, having a combined width of 16.8mm, are reduced to element holograms 76 having a combined width of 1mm when projected onto the hologram recording medium 42 in the parallax direction. (Pages 11-12, sections 0045-0048; Fig. 9).

The same cannot be said of the invention disclosed in Chen. The cylindrical lenses 122 and 124 in Chen are used explicitly for added focusing in the non-parallax direction (or y-dimension), not the parallax direction (or x-dimension). (Col. 10, lines 38-46). Only the lenticular lens array 118 is specified for use in focusing in the x-dimension (parallax direction). (Col. 10, lines 31-34). As is clearly shown in Fig. 11 of Chen, the total width of the images projected onto the hologram film 92 in the x-dimension (parallax direction) is the same, or possibly even bigger, than the width of the transparency 88. (Please note that the direction of the x-dimension (or parallax direction) of Fig. 11 is different from that of Fig. 12, as is specified in the legends). In fact, the processed beam 90 disclosed in Chen is intentionally defocused in the x-dimension (parallax direction) when projected onto the holographic film 92. (Col. 10, lines 50-58). Thus, by failing to teach or suggest of a beam-condensing projection optical system for condensing the superposed image in the parallax direction, the rejections over Chen must fail and, therefore, withdrawal of these rejections is respectfully solicited.

The Examiner also contends, in his rejection of claims 1, 10 and 12, that Chen teaches or reasonably suggests a number of images projected on the hologram recording medium being less than the total number of parallax images included in a single holograph stereogram. The Examiner argues that Chen accomplishes this by utilizing a lenticular lens array 118, such that the lenslets in the array determine the number of images in the transparency, inherently leading the number of images projected on the hologram recording medium to be less than or equal to the total number of parallax images included in a single holograph stereogram. Additionally, the Examiner asserts that because Chen teaches of utilizing at least two offset exposures of the same transparency, the total number of parallax images included in a single holograph stereogram will always be at least twice the number of images projected on the hologram recording medium in one exposure. We feel the Examiner’s arguments are misplaced.

Chen relates specifically to a method and apparatus for forming *rainbow* holograms, not holographic *stereograms*. The rainbow holograms produced in Chen consist inherently of a single element hologram. Conversely, the holographic stereogram produced in the present invention is made up of a number (5 in the example of the present invention) of distinct element holograms. This distinction is particularly relevant when examining lines 13-17 of claim 1, as well as similar lines in claims 10 and 12. The present invention describes a method for recording multiple element holograms in a single exposure in order to form a single holographic stereogram. Chen, however, teaches only of a single element hologram as its final product. Chen cannot, therefore, teach of a number of plurality of images being more than the number of element holograms (the key here being plural “holograms”) included in a holographic stereogram because Chen does not contain more than one element hologram. Withdrawal of the rejections of claims 1, 10 and 12 is therefore respectfully requested.

Moreover, claims 2-5 and 7-9, being dependant upon allowable claim 1, are now placed in allowable form and withdrawal of their rejection is therefore respectfully requested.

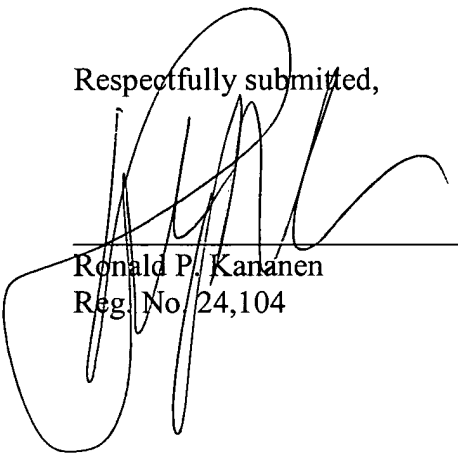
Motivation:

While the Examiner may continue to urge that one skilled in the art of holography would realize that the present invention might be achieved by combining the art of Benton and Molteni (which describe methods for producing holographic stereograms) with Chen, it is the Applicant’s contention that this is not so. The method taught in the present invention allows multiple element holograms to be exposed at once, thereby reducing the time required to produce a stereographic hologram. Benton and Molteni, however, do not teach of multiple element holograms being exposed simultaneously. Thus, there is no suggestion in the prior art references cited by the Examiner that the present invention would be obvious to one skilled in the art of holography.

Conclusion

For at least the reasons explained above, Chen fails to disclose a beam-condensing projection optical system for condensing the superposed image in the parallax direction, nor a number of images projected on the hologram recording medium being less than the total number of parallax images included in a single holograph stereogram, as is claimed by the Examiner. Moreover, there is insufficient motivation found in the references themselves, coupled with the skill in the art, for combining Chen with Molteni or Benton without reference to the specification of the present invention. We therefore respectfully request the Examiner withdraw his rejections of claims 1-5, 7-10 and 12.

Respectfully submitted,



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